American Burying Beetle Science Review
August 6-7, 2013
NOTES

August 6, 2013, Day 1

Attendees –

- From R2 RO: Paul Barret, Susan Jacobsen, Jennifer Smith-Castro, Marty Teugel, Janet Bair
- From HQ: Rick Sayers,
- From Tulsa ESFO: David Martinez, Kevin Stubbs, Angela Burgess, Daniel Fenner, Anita Barstow, Chris Tanner

Meeting purpose/objectives/outcomes (Bair)

- Start dialogue on science questions that have been raised
- How do we manage for ABB given all the scientific uncertainties?
- Many different categories of science – good/bad, best available, gaps, areas of disagreement, misapplication of science, priority needs for science, applications
- Ultimately need to get to decisions
- List of items that require a decision about ABB include – programmatic BO, Programatic HCP (the GCP), 8 or 9 BOs, 2 or 3 conservation banks, etc.
- Objectives:
    - how do we apply science to policy,
    - have discussion to review science,
    - applying science/identifying gaps in science to finalize the conservation strategy
- Not here to make decisions, want to memorialize discussion:
    - prioritize science needs and gaps,
    - engagement of other regions,
    - next steps

[*Internal Discussions for OK ESFO needs and direction, workload issues, and policy application has been omitted here*]

Development of problem statement (Barrett)

- Lays out what we are really trying to focus on today – may need to change – not set in stone – if we have new ideas or other items that we did not consider
- Trying to decide what is the best available <u>science</u> that would feed into the ABB conservation strategy
- Can we build on this draft conservation strategy, or do we need to start over?

Review of identified science issues: (Barrett/all)

- Need to come out of this with how we apply this to conservation strategy – that's what we will do tomorrow

Avoidance measures vs. minimization measures – how do we determine what these are?

- Utility of dogs for carrion removal
- Trap and relocate

- Bait away – scientific evidence showing that it doesn't work – is it a potential minimization measure – actually causes take and doesn't reduce anything – ABB don't stay with the bait

Accuracy of presence-absence surveys

- Luring beetles – pitfall traps – in areas with high density, crowd out and can injure themselves – thought that bigger bucket would be better – experiment with above ground
    - Alternative – looking at drug dogs being able to find them – potential for dogs to smell ABB themselves – don't know if the dogs can detect between nicrophorus species –
    - Problem with beetles not being available for capture – percentage of them are not even available
- Low capture rate
- Do once and considered good for the entire season
- Do you have enough traps set out?
- Do we have enough nights?
- No info on upper temperature limits
- Use of this info is what needs to be tweaked
    - It is clear when ABB are in the area
    - Question is if the presence-absence surveys are good enough to say that they are not there and projects can proceed.
- Agreed that the survey is best available science
    - Can we assume presence?
        - We can have a map and assume presence within an area – project proponents get some certainty
        - GCP is meant to be a tool – companies can chose to do it or not
- Under what circumstances can we assume presence –
    - surveys are costly –
    - often would like to see money go to conservation – under HCPs a lot of time, will either survey or assume presence – difficult to force the project proponents assume presence – creates an issue – in S7 – agency can come in and assume presence or do surveys or do nothing and assume no effect – can make recommendation to do surveys – but can't force it – need to get to the point where we are comfortable with negative survey results – example of gas pipeline project – over 20 year span of project – can be impacted for whole time – aerial survey – ROW mowing/clearing – impacts over whole time – not reasonable to say that if there is a negative survey the area would not be used by ABB for the whole life of project - survey is only valid for time of impact – for GCP and for O&G projects that had O&M they would have to come back to work with us – they should be doing this, but don't always
    - There are both positives and negatives, even in the best habitat areas, so no guarantee that a negative survey means absence – always hard to prove a negative
    - Species is a generalist – tighten up survey as much as possible –
        - Can we tweak it enough to get it to where we are confident in the negative results? Not going to get rid of false negatives – for what area around the survey is this accurate – not going to get 100% detection – never satisfied with info we have
    - Carrion detecting dog component – this is a future research need
    - Answer to "Can we assume ABB presence?"
        - within GCP we absolutely can assume presence

        - within S7, can do the same thing
        - Can you force an individual landowner who wants to fight with you to assume presence? Don't think you can – we can tell them we think ABB is there, we can explain section 9 prohibitions to them
- The question may really be **when** do we assume presence? How big an area and how long ago is acceptable? IF conservation priority areas are where we have lots of presence, where do we draw the lines for them, what are the criteria?

- 1.2 acre threshold – assumes discountable effects – no longer on the website – is it still being used?
    - We think some people are using it, but have not made a decision that it is not in the GCP – need to be applied in all areas – was used for a few individual projects, but not looking at cumulative effects – may not be able to get there
    - Seems like HCPs are the only way to go – difference of opinion about whether this may be possible – what point will we do HCP – how small is too small – industry is going to want a threshold, in past if they were under that 1.2 acre amount, they didn't consult
    - If you had density of ABBs in area, you would be able to calculate, but would almost never have that info – need to have help from a statistician – could be conservative and do calculation based on most dense population you could find
    - May not need to do an acreage threshold – could there be other options for dealing with this? – if we have a GCP streamlining process for section 7 – superseded by GCP and research – isn't a basis to say that below that threshold you are not affecting, but above that you are – considered insignificant and discountable at the time for a few projects, but was applied everywhere and this was inappropriate –
    - need to have another option for dealing with small projects
        - other examples are CA suburban development
        - TX GCP for housing – then went countywide
        - with ABB always there, across a large area
- Best conservation strategy is to come up with recovery criteria and see if we're there – how much/where – preserve/banks/etc. are there

Determining S7 and S10 Beetle range in OK

- Currently based on counties with presence data – recently a couple of counties were removed from IPAC range – why was that done?
    - In GCP want to be broad
    - Is this a question of broad modeling – lots of different possible models
    - Range has expanded a lot because we've been looking more
    - For GCP include almost eastern third/half of state –
    - For S7/IPAC – excluded a couple of counties
    - Is a mobile species – does its range change based on wet/dry cycles – edge of range might be variable
    - Do you include counties at edge?
    - Inconsistency between S7 and S10
    - What were criteria used to select S7 range?
- What is the section 7 range?
    - County map – if there was ever a positive survey in that county, it is within that range, in section 7 range, there are some that have been removed and others left in – lack

consistency – don't have a logical reason to exclude them – easier to defend it if we put the two counties back in – could include larger GCP planning area, S7 will be updated annually as surveys are done – include planning area and section 7 range and explain why they are different in the GCP
    - First time we included a few of these counties was this year – before, many of the western counties were not in S7 range
    - Under IPAC doesn't include those counties in S7 range
    - Need disclaimer on IPAC – conditional range – FO can change the range – difficult to explain the difference
    - Doesn't need to be consistent between S7 and S10, but need to be explanatory in the document about why they are not the same.
    - Need to re-include Adair and Deleware
    - Need to document your **rule set** and follow that and see what you get – show that
    - Does the member of the public get two different answers if they come in under different tools – no – But if s7 changed, then may be same as S10 – plan on GCP being 20-30 year agreement – different than a small, short term project – have need for this kind of GCP for lots of other industries – having the range defined once – S7 range and S10 range consistency will help with that in conservation strategy –
    - Not known from area – but no surveys to show presence or absence – model showed that there are some areas west of current range
    - Could be a dry line – north south – west of that not likely to find ABB – could use that rather than county boundaries
    - Could extend to adjacent counties if/when found in that particular county
    - Clarify rule set and guidance we give to the public – coordinate meeting with other states/regions to discuss how to determine range in IPAC
- Step by step instructions for project proponents to determine if they have to consult

DO we need to correct our direction? Are we addressing the issues that we all have? Want to make sure that we deal with everything we need to – FO and RO all said yes for now. Meeting is helpful and where we need to be – what we need to be discussing – should speak up if you have concerns about what we're doing/discussing.

Suitable habitat

- Reproductive
- Generalist – have a list of what is not ABB habitat – what would be suitable for reproduction – ignores fact that part of the time, adults are not on a carcass, bury themselves in leaf litter or shallowly on surface in carcass, can go feed on carcass that is on surface – can still have beetles present in part of life cycle – if carcass is too big then can still feed on it and be there – this is important for S7 consultation, for determination of risk of take – could be that the things they need for reproduction include what the carrion is using – if it's a mix of habitat – abundance of right size rodents to feed on – most of literature uses bait to attract ABB – large patch – mosaic -
- What is suitable habitat?
- For the reproductive side, needs particular soil type to be able to bury a carcass – needs enough suitable size carrion to reproduce
- Need to know in order to determine whether within the area where take could occur
- If you want to create a bank, may want to include other habitat beyond reproductive habitat

- Mosaic of habitat - suitable
    - Suitable soils for burying carcasses
    - Bigger blocks of less-disturbed habitat – e.g. TNC land – 40,000 acres – multi-thousands of acres (e.g. Ft. Gruber) – abundance of beetles in areas that would otherwise be good habitat – need something that will support rodents that they will use
    - Mosaic with wooded/grassland areas to produce rodent-sized animals
    - Dependent on certain sized carcass (rat-sized) – hypothesis passenger pigeons died off – lost prey
- What would limit the ABB – what makes poor habitat – corn field, plowed up sod farm, lack of rodent sized carcasses
- In NE – in sandhills and loess hills – large expanses protected as national grasslands – in large protected expanses, researchers expected to find lots of ABBs, but when surveyed found more near roads – more raodkill?
- Fire/grazing interacting – fire management seems to improve habitat for beetles – higher numbers in fire managed areas
- Grazing seems to correlate with lower ABB numbers
- Fire ants – seem to like the same temperature – competitor and predator – only an issue right at southern edge of range right now
- How will habitat and definition of suitable habitat relate to conservation strategy – important in terms of applying tools to this species – can't describe breeding, feeding and sheltering habitat
- Some of literature describes local area of habitat, but not consistent across range
- Description of physiological requirements – temperature, humidity, they know when they've stopped catching them – know that there is an upper limit of temperature – other research that shows that they prefer more moist soils – not completely saturated – sought out
- Areas where we know there is good reproductive habitat – we know what we have, but can't describe it well
- Varies across the range – may be some different needs in some areas
- May be some conditioning differences in different areas- AR beetles being introduced into OH and not surviving – OK beetles let go in NE did not survive, but those from NM did
- How does FO deal with this now – there is the step-by step guide right now, and if they are in an area that is unsuitable, then say not likely, or no effect – currently this is basically reproductive habitat – how to make the step by step better
    - Greater than 70% sand,
    - Greater than 70% clay
    - Greater than 80% of the soil surface is composed of rock
    - Greater than 80% of subsoil top four inches is composed of rock
    - Ag land that is tilled or utilized on an annual basis
    - Heavily grazed/compacted
    - Maintained ROWs less than 8 inches
    - Developed land with no topsoil, leaf litter, or veg
    - Urban areas
    - Stockpiled soil without vegetation
    - Wetlands
- Some areas may have these characteristics, but if there was a suitable carrion, ABB could be there – may be potential for take there
- If the majority of area has some suitable habitat, but project may fit within one of those areas, particularly if it's in one of the hotspots, chance for beetles goes up – excluded areas in potential

for take. At what point do we discount take? Where do we draw the line on take? No hard line – gray and fuzzy – take is more than a minor impact – small risk that a small project will have take of one or two individuals – Do they think they will have some beetles and some take? Distinction between not likely and likely - no hard line for how small that risk is supposed to be – NMFS says 1 in 10,000 – used fish to develop that

- Don't have any way to track adult beetles – don't know where they are going, what they are doing during the day – almost all of our stuff is based on reproductive part of life cycle
- What do we definitively know about their above ground life cycles – some suggest they head for a carcass and they hang out there exclusively – they could be in leaf litter – at nighttime they head for a carcass – during the day they may be burying themselves in leaf litter – may spend the day under a large carcass – need some cover – leaf litter or carcass – if they don't find a carcass will bury in somewhere – Do they survive? How long can they go without being buried under a carcass? Think four days without food – need water more often (12 hours) – moisture in soil – they do kill other insects – get moisture from that – some have proposed that insects are a larger part of their diet – eat the grubs/maggots on a carcass and defend it
- Is there a size component to the exclusion areas? not really

Conservation strategy –
How do we identify Conservation Priority Areas?
Conservation Priority Areas – these are the most important areas for beetles -

- Currently priority areas are priority or not – not a range or continuum. How would you define priority areas? Do people have issues with priority areas?
- Should they be determined based on an existing model, some other model, or should they be based on something else?
- Are we going to put mitigation banks here?
- Probably assume presence in these areas
- Expect higher mitigation ratios for development in these areas as well

In conservation priority areas – high density of beetles, low degree of fragmentation –

- Potential effects of climate change- if it gets drier, or something happens over time, gets drier, gets logged, gets hotter, ABB can only take up to 84 degrees could limit movement – move line northward
- Do we know how important connectivity is? Sounds like not a lot of difference in genetics – have some studies looking at mtDNA – looking at PCR from ABB legs – looking for museum samples – just getting started on this process now
- Multiple conservation priority areas for redundancy -
    - A lot of comments about surveys being old – have areas where we have not surveyed in a long time? McCurtain county – haven't done surveys in a long time – a lot in that area is no longer relevant – the ones on the eastern half of the state – O&G are focused on area where there are lots of ABB
    - Not much recent survey effort in McCurtian (most recent was 2005, 2004, 2002), but numbers were dwindling – same thing was happening in TX – since 2006 no ABBs – we should go get some sampling done in McCurtain –
    - General trend appears that we are increasing – but likely due to more surveys - no data to show density – appears to be difficult in drought conditions – when in high temps and dry conditions, don't catch ABBs or any insects
    - Could be more hotspots, but don't know because we lack the data

- Model paper – Crawford and Hoagland 2010 – is it worth another modeling effort? If you had the ability to refine the models, could you identify more specific areas – unfragmented blocks of habitat - - would likely need to do more systematic survey efforts – in NE – the model for sand hills did not work on loess hills, but then went and ground-truthed it and used what they found on loess hills.
- Can we even identify conservation priority areas?
- How would you do it?
    - Have more systematic sampling effort across entire range – done by same people in same way across areas
- Existing model developed based on existing positives
- Discussion of mitigation banks and will we be able to change these in the future if we have new information – mitigation bankers are pushing to say we are in OK, rather than within a service area – the service area should not be changed – one bank is almost ready – the three areas that they are using – we don't have recovery units for this species – if we have one in service area 1, we have monopoly – banking industry saying they don't want that – want competition – if they don't know where impacts are going to occur are they going to have to switch to different service areas and different
- Sometime in the next month or two need to have a map available with conservation priority areas – can make changes to this – it is not set in stone – may take more effort to make changes that we want – should include this in adaptive management strategy – as more data comes in, would reevaluate – could look at new map in future within those conservation areas
- It might be appropriate to assume that this is one big area until you have a better sense that there is some reason to compartmentalize it
- May eventually be research that shows carrion dog surveys are superior and we remove bucket surveys
- If we put 3rd party in charge of managing mitigation funds, incur administrative funds – some of the banks have suggested they would love to do research – don't have ready source right now – seems like a glaring need – want to be ready should funding become available – we have x amount that we need to spend immediately – need to be able to offer this up as a proposal
- Can see there are concentrations – see areas where you want to protect, areas where you want to have higher mitigation areas –known/good areas of beetle – different question is how we are applying it – if we are looking at only places to conserve and places where we assume presence, this is different than if we are looking at areas where we think there could be good conservation benefit

Avoidance measures vs. minimization measures – how do we determine what these are?

- Utility of dog/carrion removal
- Trap and relocate
- Bait away – scientific evidence showing that it doesn't work – is it a potential minimization measure – actually causes take and doesn't reduce anything – ABB don't stay with the bait

- Do we think that impacts to non-breeding/feeding part of life will be significant?
    - Light traps – not very effective – have not done sweep nets – thought these would not be effective given only active at night

    - Where are they going at night – where are they going in the daytime – take on adult life stage may not be impacting the overall population – when in doubt lean toward benefit of species –
- Main point is what is the thinking behind what you want to do – need to have a plausible explanation – Is there any similar phenomenon for another insect – similar species – to draw from? On what basis would we say burying a pipe in a ROW is or is not harmful to this species? We have records that they are underground, we have positive surveys – what gives us reason to think that the transitional stage is important? Comparison to summer habitat with Indiana bat – how important do you think this is?
- Some percentage of ABB are out there in the leaf litter in the day – asking for mitigation from these companies for take – have we done that for the non-breeding habitat yet? Talks about it in the GCP in one place, but in another place it discounts it. Assuming some level of disturbance is happening in that ROW - using acres of habitat – we can't define habitat though so this is uncomfortable.
- Will putting some area into permanent protection compensate for the loss of non-breeders that are above ground? Does doing these additional measures constitute avoidance or is it minimization?
    - The one being used right now is having dogs find carrion and then removing it – if carrion is being used it's marked, then a buffer area around it is avoided. If carrion is buried, analyzing to see if ABB is using it. This is one of the questions – taking pictures – sending that to experts to analyze – originally thought they were going to use dogs to id any buried carcass, and treat as occupied by ABB – now we think they are just trying to decide if ABB have buried carcass or if something else buried it.
- Are there no avoidance measures? One proposal was put forth in house – do a survey at start of season – do carcass removals every other day for the entire season – this was very cost prohibitive – minimization to the maximum extent practicable – not considering non-reproductive individuals
- What are the problems with saying that there is no possible avoidance in ABB area? If beetle can be detected ahead of equipment coming through, can remove most of risk if dogs come through and sweep area for carrion and if they are good at it – can get most of area removed prior to ground disturbing work
- O&G wants to get avoidance or take permit and will comply – have watchdog groups looking for reason to take them to court – worry that if we give take or avoidance, we will get sued and want to have adequate basis for our reasoning and be able to defend it
- Other O&G companies will hear we are using this as avoidance, but we are putting together the GCP for O&G industry which will provide conservation benefit. They will see if what was called avoidance before is more cost effective, then they will do whichever is more so – may be cheaper to train dogs and "avoid" but may not. Letter that was signed says that we approved removal for avoidance, but can send a new letter that says it is not supported by what we know – we argue this is not avoidance – if you want a permit, it comes with a cost and these are the items that we are expecting to show avoidance.
- Mark West – proposed the removal as an experiment – there was some language that indicated that this is approved for this project this one time – Mark West didn't specify if it was for multiple projects. We can tell them that we've looked at this again and we are concerned about these issues – we are concerned that this is not avoidance – they should pursue a permit under the GCP or their own HCP based on this discussion.
- Assuming dog carrion works – it is not avoidance – it is not discountable, it is only minimization

- Dog carrion removal is minimization and not avoidance – is that true? Not everyone is in agreement with that – but FO is – we've looked at it, other issues have been brought up – a permit is in their future, not avoidance – a series of recommendations

- Uncertainties - Legitimacy of above ground and below ground carrion being buried by beetle or used by beetle – risk to ABB not on Carrion – buffer size around carrion – Some carrion will be missed (about 90% will be caught – that is the training level) – concern about effect of moving carrion on beetle

- Trap/relocate – gotten away from that because it is not avoidance, but now we think it may be minimization – is effective in moving some out of areas – but don't know how the ABB fare at that point
    - OSU is studying this question – will hopefully be able to build this into the adaptive management of the GCP

- Need to think about what do we do in the absence of perfect information – can't answer all our questions because we don't have time/resources to do so, but in absence of that, we need to make decisions in the meantime – can do adaptive management to try to get to those questions answered – will complicate strategy, but would rather have good strategy that is defensible

August 7, 2013 Day 2

Application of science to conservation strategy

How to define suitable habitat?
How to define conservation priority areas?

Before we get research results to answer these questions, we have decisions to be made – will need to do this without complete information.

In conservation strategy, we can add adaptive management language – since this is a living document, it is intended to be updated as we get new information.

Outstanding issues in the conservation strategy –

- Shell document – links/references all these other items
- Step-by step document
    - Survey protocol
        - With tweaking, presence/absence is best available science – we don't know the power of the survey protocol – we are saying that a negative survey result indicates absence – if we ask for surveys, then action agency may come back with negative results, do we say that there is no take there. Could be some categories of activities that negative results are acceptable – but in others they are not.
        - Could we assume presence for projects of certain activities and certain size? Possibly…
        - For the application of the survey protocol, if we are not close to a solution about how industry deals with this, we will have lots of pressure to deal with it – want

to come out of this with some skeleton of a plan – need to start putting that down now – need to be prepared to explain that there is either a survey technique that you are willing to accept that there is a negative response and that represents absence – if not, we should not be asking industry to do this – there may be companies that will be willing to take chances, other companies want FWS approval for take – the GCP is easiest, an individual HCP is always an option, too, but they will have to get in line and wait – a 0 is indicative of absence – if you are not willing to do that, need to say so

- For which areas and which kinds of projects are we going to assume presence – the southern ones are not really accepted as having beetles – which areas are appropriate for this – need to decide – have high potential to take beetles within these areas – could be most of map, could be where current map shows, could be without the southernmost areas on map, up to FO to decide – just need to explain why – within some relatively large areas of Eastern OK, good likelihood that you will have potential take of beetles, in some areas, it is highly probable
- Is there any place within the range where we will accept a negative within a range? (with short-term tweaking)
    - Depends on what the tweaking is – activity period, bimodal, minimum/maximum night temperature, number of nights, number of buckets, timing (in late june negative/early july positive – looking at correlation of weather activity), what do we consider the effective area of the survey (could we have a different radius for positive results vs. negative results)
    - Minimum temps/humidity
- Can we spend some time working on this question or should we just assume presence throughout the range? Are there circumstances under which you would consider an improved survey to be valid?
    - Looking at the science, not comfortable with surveys
    - Looking at the practical side of this, can't expect folks to mitigate everything
    - Only one permit issued – for keystone – have to do mitigation for the places where impacts occurred – will contribute to conservation banks – going to be an acceptable amount of take occurring – offsetting measure should be commensurate with the take – there is an important distinction to be made between whether there are beetles in the action area and if we think the action to be taken will take ABB
    - If we have a map that says that we think ABB is present in eastern OK – so we think that to FWS the ABB will be taken by ground disturbing activities – if someone comes to us and seeks permit and gets it, then they have done their part and if someone else tries to bring charges against the permitted person – discussion of section 9 and implications – unlikely to be hauled in to court to defend our lack of enforcement of section 9 – we were exercising our enforcement authority – Tulsa FO employees do not have any personal liability – the US government immediately inserts itself in case if there are ever named FWS employees

- Outside of conservation priority areas, if we get a negative result from a tweaked survey we're comfortable with stating it is unlikely to result in take for certain types of project.
    - Types of projects –
        - Size – larger the area, the higher the probability of take – used to have the 1.2 acre – based on ODOT project and ABB density of areas – if you impacted less than that, could be considered insignificant and discountable
            - Could take density info outside CPAs and develop new threshold to represent beetle density info across range outside of Conservation priority areas – use 1% probability of taking? Where is the cutoff – what do we consider discountable –
            - Discussion of size used to decide whether to survey
        - Length of impact - Permanent vs. temporary – how is it managed after initial impact (permanent is something like a pipeline) – if we say 1 yr for temporary impact – b/c beetles only moving around about 3 months of year – have to wait until the next year potentially for them to come back to area – move out at time of activity, but then soil compaction or other temporary impact
        - Exclusion areas – are you even going to ask for surveys? May need to tweak these as well – the top 4 categories (soil types) -
        - Linear vs areal
        - activity
- discussion of removing the >70 %, >70% clay, > 80% surface rock, > 80 % subsurface rock –
    - in favor of removing these as criteria, but are comfortable with saying no need to survey on the other exclusion areas
    - still need to work out details of this, but FO will work on that
- Habitat definition
- Beetle range

It seems that we need to identify these three items:

1. What areas do not need surveys at all (agree that ABB is not there)
2. What areas would we feel comfortable with accepting negative survey results with tweaking
3. What areas would we feel like we should assume absence

- Tweaking of survey protocol –
    - Maximum temperature for survey should be 84/85 degrees – need to look for that in literature (there is a relevant study to reference) – beetles will die at those temps, so not going to catch them at that temp – will be hunkering down and not moving around – limiting this will allow us to eliminate one source of false negatives

- Length of time survey is valid – if later in same season, survey in April, but project not until September – right now they can do survey May 20, then can wait to start project until May 19 of next year
- Made the point that species list is valid for at least 180 days – folks could ask about this – but these do not have to coincide
- Discussion of survey season – 5 consecutive nights below 60 degrees – when will that be – can set the dates – can have an early date, September 20 or when temps were below 60 (whichever date is later) – comfortable with this?
- Discussion of 9 weeks given life history of ABB – they are underground for this long – will need to do an additional survey after 9 weeks to be more comfortable with negative survey
- At what point before the inactive season should they survey
- Surveys for active season and surveys for inactive season – recommend surveys for inactive season clearance be started in last two weeks of august
- Need to update May 20 and Sept 20 dates based on temps given that they were calculated about 5 yrs ago and they have been seeing higher temps since

- Duration –
  - Some researchers think that we should be doing 5 nights, others think that three nights are sufficient
  - On day 4 fresh bait and may be pulling them in
  - Don't know the radius that we are pulling them in from
  - If you pull beetles in, that may be OK
  - If we do 5 nights, will increase our confidence – know that they are in the area
  - Could we do 4 instead of 3 – that's when NE is finding highest after changing bait
  - Another question is should they change the bait more often
  - Why did they go with 5 days – if we like that rationale, could decide to go with that
  - One of Bedick's papers (2004) said 3 days was good, 5 was better – other researchers showed no difference between 3 and 5 days, but that is not published yet
  - Went to 5 days for 1 or 2 surveys seasons – costs went up – industry didn't like it – we have published info saying 5 days is better, so no good reason not to do that
  - If within x number of miles of previous positive within last 10 years or something – would require higher number of trap nights
  - The simpler this is, the more likely people are going to do it correctly
  - Will anything that has a positive within a certain time frame be within a Conservation Priority Area, so assuming absence – no need to do a survey – within or outside of the Conservation Priority Area –
    - could have 3 tiers instead–
    - need to consider the time frame – if you have a positive outside of Conservation Priority Areas, will need to periodically update Conservation Priority Areas (annually?)
  - How can we simplify how we put that on the landscape
    - Could have two-tier options – where there are the CPA's that are most dense areas, best habitat, and other areas with positives within a certain time frame outside of Conservation priority areas would be important areas or some other term where we thought there might be beetles
    - Only do surveys these two time frames on surveyors – do we have the data? Is it in the data sheets? Can it be dug up? Been done opportunitistically

throughout the season – we know that folks are trying to minimize chance of catching them – maximum temp, bimodal activity period – won't get to a perfect survey – but can get to best available.
    - OSU should have a lot of data about bimodality – have had traps on the ground since March and they will be going through the season

- Effective radius of the survey

- Soil moisture/humidity – adaptive management – don't have info just yet – nighttime temperatures may cover some of that, don't have this info yet, but need to get to it

- Mitigation ratios
    - For this we have a straw dog on the table – can work on this later – should be relatively straightforward to establish this.

- Conservation banking guidance
    - Service Area – should we stick with what it is or would we do just one for the whole area

- Density requirements – ABB densities -
    - At least two banks that have come in – in the heart of beetle area – no one is concerned that the area where they want to locate bank will not be conservation priority area - they are clearly in dense ABB areas

- Conservation priority areas – areas to be used for mitigation banks and will require higher mitigation ratios
    - As long as within CPA and meets non-exclusion areas – is that what we want? Will this automatically meet requirements of ABB mitigation bank? Not necessarily just that – the way it exists as written right now is must meet other requirements –
        - Beetle density
        - Rodent or other carrion density
        - Minimum Size requirement
        - %beetle habitat within that area
    - areas where conservation and recovery should be targeted – CPA are areas where mitigation should occur and recovery efforts should focus
- Conservation Priority Areas – discussion on map
    - From southern McCurtain county and Bryan county areas were declining – don't want to include them in the CPAs
    - Other areas look good, but could be expanded – discussion of Pushmataha county – most surveys get positives – but most are a little old
    - Discussion of purpose of conservation priority areas
    - Are we good with the entire blob from model being considered part of CPA?
        - Not saying that everything in this areas qualifies as a mitigation bank
        - Acceptable that banks are being located within this area
        - Harder to justify that everyone in this area must assume presence
        - 5 yrs or 10 yrs - radius around positives over the last certain number of years – could you assume presence?
        - Why would you want to shrink the area where you assume presence?

- Conservation priority areas - could be priority 1 and 2 – 1 is area where we would assume presence and focus recovery efforts/banks – 2 is where you could focus efforts, but could still do surveys – not sure we would want to accept a negative survey though.
- Could use all recent positives and a buffer around them – could use that as an area to assume presence – where are you going to expect them to do survey
- Current gray blob from model is too large to assume presence everywhere – how do we shrink that down to a justifiable/defensible way
- Did GIS exercise where we added the last 10 years of positive surveys and buffered at 10km (from literature) – this could be one way to get at a different area to assume presence
- Looking at this in the area that was modeled and currently the gray blob of the Conservation Priority Areas, would you accept a negative survey in that area? Most said they would not want to – should assume presence in those areas, too.
- This will be a big change and concerned about pushback from industry about this – have always been able to do surveys before and won't be giving them that as an option now.
- Would be hard to say that there was no impact/no take in the gaps when looking at buffered 10 km radius areas
- Other suggestion to look at buffers around higher density areas – using 0.637 as the cutoff – this is the average density of the gray areas (the Conservation Priority Area) – this gets complicated to explain – why the model was used as an input to a different Conservation Priority Area, though
- We have the Conservation Priority Areas – have the assumed presence areas where no surveys accepted – and areas where we require surveys and accept negative surveys
- Is it better to have the data than to have the risk of false negatives?
- Conservation Priority Areas could target conservation or could serve both purposes to assume presence and target conservation
- Need to be able to simplify this down – what are the decision rules?
    - Could we use a percentage of pos/neg
    - We could weigh things by more recent to longer time ago
    - The 0.637 is based on a different set of criteria – difficult to change this because you have to weigh it differently – can not do that right now – getting over our heads - use caution of what the density or other cutoff for weighting that we use is
        - Could use trap nights – look at published data and look at the high density areas and what those ranges are to use as a cutoff/threshold

- Are people comfortable with CPA from modeled area in gray blobs with exception of Weyerhauser area? There's new info from 2012 that was not included in model that produced gray area – Bryan county area - lots of ideas about what to include, what not to include – got complicated included some and not others – draw some lines and lump in what is within certain distance
- TX doesn't want the priority area – if they find ABB, that could change
- Define the Conservation Priority Areas and areas to assume presence = within the 10km buffered positive points within 10 years – take away single surveys that are disjunct – folks seem to be in agreement about this

- Discussion of connecting areas on map that are shown with this – if it is surrounded should be included in CPA –
- Will need to establish the rule set and keep it relatively simple so that it can be easily explained

Discussion of range of ABB-

- Dry line idea – not a fine line that never changes – is dynamic dependent on drought/decadal wet years/etc.
- Adjacent counties – adjacent to known surveys – distance vs. political boundaries
- Dryness – used to have dryness as a habitat variable, but we don't anymore
- Could we say that we're adding x number of miles as a buffer as a section 7 range – included in the list of counties that produce ABB as a species for that county
- In IPAC for S7 range –
    - Include list of counties where ABB has been detected since 1979 and include all the adjacent counties. In adjacent counties, there would be a note that surveys have not detected the beetle there, but they are included in the list of counties for S7 range because ABB was detected nearby in adjacent counties.

Marty and FO will deal with mitigation ratios tomorrow

Habitat definition - not likely to get there and may not be all that useful at this point

Outstanding issues –

- Involvement of other offices in ABB conservation strategy
    - Regions 2, 3, 4, 5, 6
    - OK, KS, NE (broader footprint – ag), AR, RI, KY, SD – OH and MO (reintroductions)
- Can't take a listed species – authorize take of listed species – potentially in violvation of state laws – this happens all the time – is it appropriate for NE to completely avoid take – if the conservation is large enough would turn a blind eye to it – Attorney General – Trap and relocate is being used as a minimization measure in NE
- Refine habitat characteristics
- Other survey techniques
- Detectability issues

TO DO

- Clarify rule set and guidance regarding beetle range for S7 and S10
- ABB density outside CPA for minimum size below which surveys are required

Review

- Progress on step-by-step outline –
    - Need to address effective radius
    - Need to address Number of buckets
- Survey protocol – need to finalize
- Habitat definition
- ABB section 7 range – since 1979 all counties plus explanation of adjacent counties

- Conservation priority areas
- Mitigation ratios
- Conservation banking

- Outstanding questions –
    - answered 2 of them –
        - can we assume ABB presence
        - when do we assume presence
    - Management questions pending –
        - involvement of other offices in ABB conservation strategy
        - How best to coordinate with other states/regions

- Discussion of potential research –
    - decreasing threshold size based on local density – other standards –
    - ID habitat – OK specific –
    - Where are adults when not on carrion?
    - Increase confidence in survey protocol
- To Do
    - Finish conservation strategy
    - Finish GCP
- Next Steps
    - Clean up notes – will distribute them to group
    - Will produce white paper for group about the ABB science
    - Marty will be here tomorrow – rest of RO leaving tomorrow AM
    - GCP schedule – revised as of July 11, 2013
    - Need more detail between first two items on this – after this meeting, before industry meeting on GCP – standard timelines on GCP process – intent is to stick to this
    - New congressionals on this new schedule, so need to deal with those
    - Other decisions that need to be made – include BO's and maybe other HCPs
    - Need to have a longer conversation with other regions – if we're making changes here, need to have with them – rick may get involved in cross-regional discussion if needed
- Outstanding field officec oncerns about mark west agreement – can write them up and send them off to RO and RO can follow up with mark west to explain that these are the items that are specific to this project – this is not allowed for other companies to use as avoidance – our view that this is avoidance has changed now that we've had more folks looking at it and we've had these communications
- Janet not concerned about it proliferating and don't expect it to – want to get it into written record so that it will only be used for this particular issue – some companies will likely try to use these methods – don't want that to get out of hand
- Have written comments from several folks about these items

Regard this as an ongoing/continuing/open conversation